

WE CLAIM:

1. A method of detecting and quantifying EGFRvIII in a
5 mammal, comprising performing an ELISA specific for EGFRvIII with a
biological sample from said mammal.

2. The method of **Claim 1**, wherein the biological sample is at
least one of the group of urine, serum, plasma, CSF, amniotic fluid, breast
10 secretions, lung sputum, or tumor cell extracts.

3. A method of detecting cancer in a mammal, comprising
performing an ELISA specific for EGFRvIII with a biological sample from
said mammal.
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4. The method of **Claim 3**, wherein the biological sample is at
least one of the group of urine, serum, plasma, CSF, amniotic fluid, breast
secretions, lung sputum, or tumor cell extracts.

5. The method of **Claim 3**, wherein said cancer is at least one of
the group of breast cancer, adenocarcinoma, squamous lung cancer,
gastrointestinal cancer, renal cell cancer, bladder cancer, glioma,
gynecological carcinoma, or prostate cancer.
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6. A method of selecting a mammal with cancer for novel
mutant EGF-directed anticancer therapies from at least one of the group
of a vaccine, an antibody-toxin conjugate, or EGFRvIII-specific tyrosine
kinase inhibitors, comprising performing an ELISA specific for EGFRvIII
with a biological sample from said mammal, analyzing results of said
30 ELISA, and selecting at least one of the group of said mutant EGF-
directed anticancer therapies.

7. The method of **Claim 6**, wherein the biological sample is at least one of the group of urine, serum, plasma, CSF, amniotic fluid, breast secretions, lung sputum, or tumor cell extracts.

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8. An ELISA for the sensitive detection of wild type and/or EGFRvIII in a mammalian sample of urine, serum, plasma, CSF, amniotic fluid, breast secretions, lung sputum, tumor cell extracts, or any extracellular or cellular fluids.

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9. A method of detecting a preneoplastic lesion in a mammal, comprising performing an ELISA specific for EGFRvIII with a biological sample from said mammal.

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10. The method of **Claim 9**, wherein the preneoplastic lesion is Barrett's esophagus.

11. A method of detecting benign prostatic hyperplasia in a mammal, comprising performing an ELISA specific for EGFRvIII with a biological sample from said mammal.

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12. A method of generating antibodies specific for EGFRvIII, comprising:

preparation of an antibody against the mutant EGF receptor by immunizing a mammal with at least one of a mutant receptor protein, an epitope of said mutant receptor protein, a sequence that mimics said epitope, or DNA encoding said mutant receptor protein or epitope;

obtaining a high titer antibody preparation from said mammal, said antibody preparation recognizing mutant EGF and wild type (wt) receptor;

pooling bleeds from said mammal, concentrating and partially purifying said bleeds by precipitation;

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obtaining a pellet from said precipitation and dialyzing said pellet;

and

passing said (antibody preparation) dialyzed pellet over an affinity matrix column (with said epitope) and eluting antibodies from said column
5 to obtain antibodies specific for EGFRvIII.

13. The method of **Claim 12**, wherein said epitope comprises
EKKGNYVV (SEQ ID NO:5), a fragment of said sequence, or a modification of said
sequence.
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14. The method of **Claim 12**, wherein said epitope comprises
LEEKKGNYVVDH (SEQ ID NO:1), a fragment of said epitope, or a modification
of said epitope.

15. The method of **Claim 12**, wherein said epitope comprises
KGN (SEQ ID NO:6) or a modification of said epitope.

16. The method of **Claim 12**, wherein said epitope comprises
LEEKKC (SEQ ID NO:2), a fragment of said epitope, or a modification of said
epitope.
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17. The method of **Claim 12**, wherein said epitope comprises
EKK (SEQ ID NO:7) or a modification of said epitope.

18. The method of **Claim 12**, wherein said epitope comprises
NYVVDH (SEQ ID NO:8), a fragment of said epitope, or a modification of said
epitope.
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19. The method of **Claim 12**, wherein said epitope comprises
30 NYV (SEQ ID NO:9) or a modification of said epitope.

20. A method of generating antibodies specific for EGFRvIII,
comprising:

- preparation of an antibody against the mutant EGF receptor by immunizing a mammal with at least one of a mutant receptor protein, an epitope of said mutant receptor protein, a sequence that mimics said epitope, or DNA encoding said mutant receptor protein or epitope;
- 5 obtaining serum from said; and
- passing said serum over an affinity matrix column and eluting antibodies from said column to obtain antibodies specific for EGFRvIII.